

What is claimed is:

1. An illuminating unit for illuminating a target portion of an object to be illuminated, comprising: a fiber holding portion having a fiber insert hole holding a light-emitting end portion of an optical fiber; and a lens holding portion located downstream of the fiber holding portion in a light traveling direction, light emitted from a light-emitting end of the optical fiber being directed to the target portion through a lens held by the lens holding portion, wherein:

the fiber insert hole comprises an equal-diameter portion having a diameter substantially equal to a diameter of the optical fiber, and a larger-diameter portion having a larger diameter than the equal-diameter portion and opening at one end face of the fiber holding portion, the fiber insert hole holding the optical fiber extending through the equal-diameter portion; and

the lens is abutted against the one end face of the fiber holding portion or a forward end face of a fusion-deformed portion of the optical fiber, the fusion-deformed portion being fitted in the larger-diameter portion and resulting from fusion deformation of a leading end portion of the optical fiber projecting from the equal-diameter portion.

2. The illuminating unit in accordance with claim 1, wherein the larger-diameter portion is shaped to have an inner periphery clear of light that is divergently emitted from the

light-emitting end of the optical fiber.

3. The illuminating unit in accordance with claim 1, wherein: the lens holding portion has a lens holding hole accommodating and holding the lens therein; and the fiber holding portion is shaped columnar having a sectional configuration same as the lens holding hole and defining the fiber insert hole axially extending therethrough, the fiber holding portion being fitted in the lens holding hole holding the lens on a side opposite away from the target portion in a manner to abut the lens against the forward end face of the fusion-deformed portion or the one end face of the fiber holding portion.

4. The illuminating unit in accordance with claim 1, further comprising a cylindrical adapter having an inner periphery capable of fitting around the fiber holding portion without play therebetween and an outer periphery capable of fitting into the lens holding hole without play therebetween, provided the fiber holding portion has a smaller diameter than the lens holding hole.

5. The illuminating unit in accordance with claim 4, wherein the adapter is formed with a tapered surface for abutting and fixing the lens on a side closer to the target portion.

6. The illuminating unit in accordance with claim 1, further comprising an enclosure defining a plurality of discrete fiber insertion holes holding respective optical fibers, the lens holding portion holding a plurality of lenses in a one-to-one correspondence with the optical fibers.

7. The illuminating unit in accordance with claim 6, further comprising a single second lens for refracting light rays outgoing from the respective lenses to gather the light rays onto the target portion, the second lens being located between the plurality of lenses and the target portion and having an annular shape defining a central hole extending therethrough.

8. The illuminating unit in accordance with claim 1, wherein the lens holding portion has a ring shape defining a plurality of discrete lens holding holes located circumferentially.

9. The illuminating unit in accordance with claim 1, wherein the lens held by the lens holding portion is shaped spherical.

10. An illuminating unit for illuminating a target portion of an object to be illuminated, comprising: a fiber holding portion having a fiber insert hole holding a light-

emitting end portion of an optical fiber; and a lens holding portion located downstream of the fiber holding portion in a light traveling direction, light emitted from a light-emitting end of the optical fiber being directed to the target portion through a lens held by the lens holding portion, wherein:

the fiber insert hole comprises an equal-diameter portion having a diameter substantially equal to a diameter of the optical fiber, and a larger-diameter portion having a larger diameter than the equal-diameter portion and opening at one end face of the fiber holding portion, the fiber insert hole holding the optical fiber extending through the equal-diameter portion with the light-emitting end thereof coinciding with a forward end of the equal-diameter portion; and

the lens is abutted against the one end face of the fiber holding portion.